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Stable Ischemic Heart Disease

OUTCOMES IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFTING BASED ON HOSPITAL VOLUME, 2007-2011

Poster Contributions
Poster Hall B1
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Session Title: Drugs, Revascularization, Integrative Cardiology
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Background: The volume of coronary artery bypass grafting (CABG) procedures has been declining. Studies suggest an increased risk of adverse events in patients undergoing CABG at low volume centers; this has yet to be evaluated in a contemporary national registry.

Methods: We analyzed all patients who had CABG from 2007 to 2011 in the National Inpatient Sample database. Trends in procedure volume and rates of adverse in-hospital outcomes (death, stroke, bleeding, respiratory failure, myocardial infarction, shock and acute renal failure (ARF)) were examined. Multivariate propensity-score adjusted analysis was performed to compare outcomes for hospitals based on quartiles of CABG volume.

Results: The frequency of CABG has decreased by 23.1% from 2007 to 2011 (370 cases to 285 cases per million adults), with the most marked decline at higher volume centers. Patients in the highest volume quartile were more likely to have a history of prior CABG (12.1% vs. 11.6%, p<0.001), prior PCI (12.1% vs. 11.6%, p=0.01), peripheral vascular disease (15.6% vs. 14.4, p<0.001) and concomitant valve surgery (14.4% vs. 9.8%, p<0.001). Rates of mortality, respiratory failure, and bleeding were highest in low volume centers (see table). In multivariate analysis, low hospital volume was an independent predictor of mortality (adjusted OR 1.39, 95%CI 1.24-1.56, p<0.001).

Conclusion: CABG procedures have declined, mainly at high volume centers. Low CABG volume is associated with worse in-hospital outcomes.

Association Between Hospital Volume and Outcomes after CABG (with Fourth Quartile as Reference)						
	First Quartile (Lowest Volume)		Second Quartile		Third Quartile	
Outcomes	Adjusted Odds Ratio (95% CI)	p Value	Adjusted Odds Ratio (95% CI)	p Value	Adjusted Odds Ratio (95% CI)	p Value
Death	1.40 (1.24-1.56)	<0.001	1.11 (1.02-1.21)	0.01	1.15 (1.06-1.23)	<0.001
Respiratory Failure	1.25 (1.16-1.35)	<0.001	1.22 (1.15-1.28)	<0.001	1.10 (1.05-1.15)	<0.001
Bleeding	1.33 (1.19-1.49)	<0.001	0.97 (0.89-1.06)	0.49	1.08 (1.01-1.15)	0.03
Stroke	0.92 (0.78-1.11)	0.44	0.84 (0.74-0.94)	0.004	0.93 (0.84-1.02)	0.12
ARF	1.05 (0.98-1.12)	0.14	1.01 (0.96-1.05)	0.75	1.07 (1.03-1.11)	<0.001